

CURRICULUM VITAE

1. NAME Gary H. Wikfors

2. PROFESSIONAL ADDRESS: Northeast Fisheries Science Center
NOAA, National Marine Fisheries Service
212 Rogers Avenue
Milford, CT 06460

3. CURRENT TITLE/POSITION/GRADE Chief, Biotechnology Branch/Supervisory
Research Fisheries Biologist/ZP-0403-IV

4. EDUCATIONAL HISTORY

a. Degrees received:

B.S. in Biology (University of Maine, Orono, ME, 1976)

M.S. in Biology (University of Bridgeport, Bridgeport, CT, 1979)

Ph.D. in Phycology (University of Connecticut, 1996)

b. Other training:

In-house statistics courses, Milford Laboratory, NMFS, taught by NRC
Consultants, 1983.

Course in Sailing and Seamanship, taught by U.S. Coast Guard Auxiliary Flotilla
73, Milford, CT. Earned certificate, 1984.

Introduction to Supervision (U.S. OPM 2-day course), 1985.

Instrumental Analysis (3 credits), University of Bridgeport, 1986.

Management Briefing: Conflict Management (Supervisory EEO Training), 1987

Management Orientation (OPM, 2-day course), 1987

Supervisory Training (NOAA, 4-day course), 1988.

FACSCAN Flow Cytometer Basic Operator's Course, one- week course at
Becton-Dickenson Training Center, Braintree, MA, 1990.

20/20 Training at University of Connecticut in Phycology, 1993-1995.

Bigelow Laboratory Flow Cytometry Workshop (one-week special-topics training)

Overview of SQL (AT&T Technical Education Center), 1995.

Oracle for End Users (AT&T Technical Education Center), 1995.

Intro to UNIX Operating System for Users (AT&T Technical Education Center),
1995.

Introduction to Management and Supervision (OPM, 2-week course), 1996.

COTR Basic Course (NOAA 2-day course), 1999.

BD Biosciences FACSVantage basic operators course, 2002.

Experimental Design (in-house, 10-week course taught by NRC Consultants),
2002.

5. PROFESSIONAL HISTORY

8/04-PRESENT - Supervisory Research Fisheries Biologist, ZP-0403-IV, National Marine
Fisheries Service, Northeast Fisheries Science Center, Milford, CT. Chief, Biotechnology Branch,

Aquaculture and Enhancement Division; Supervisor, Christopher L. Brown. Responsible for managing the research, personnel, and fiscal operations of a group of 15 professional and technical staff applying the tools of biotechnology, genetics, microbiology, immunology, and chemistry to studies of living marine resources in aquacultural and environmental contexts. Completed transitions from GS to Demo and finally CAPS Personnel Management system, and from PPT to PPBS and finally eAOP financial planning instrument. Working to improve coordination of the group to focus cooperative research on detecting sub-lethal stress in target species – mainly bivalve mollusks – and to build the breadth of technical expertise in the Branch through new hires, post-docs, and students.

12/79-8/04 Microbiologist –Research Microbiologist, GS-9 - GS-14, ZP-0403-IV, National Marine Fisheries Service, Northeast Fisheries Science Center, Milford, CT. Group Leader for Phytoplankton Trophic Interactions Project, Biotechnology Branch, Aquaculture and Enhancement Division, supervisors Ravenna Ukeles, Richard Robohm, Anthony Calabrese. The three major responsibilities of this position were: 1) Managing activities of a group of researchers, including project planning and performance management, 2) conducting original laboratory and field experimental research on marine phytoplankton relative to their use as a source of nutrition by bivalve mollusks and other invertebrates, and 3) coordinating the mass-culturing of microalgae to provide nutritional support for invertebrates being reared for experimental purposes throughout the Milford Laboratory. Duties included technical supervision of unit staff, preparation of formal research plans, designing and conducting experimental procedures for researching physiological responses of microalgae to nutrients and pollutants, as well as nutritional, physiological, and immunological studies with bivalve mollusks, evaluating results, and preparing manuscripts describing original research for publication in peer-review journals and presentation at professional meetings. Also responsible for managing unit resources and responding to Agency reporting requirements. Organizational accomplishments: took initiative to supplement internal financial support with outside grants; established collaborative relationships with many outside researchers to accomplish research goals beyond capabilities of the work group; developed training course in microalgal culture for commercial aquaculturists and taught course 12 consecutive years; served as default “extension agent” for microalgal culture for US aquaculture community; served on academic committees of several graduate students in capacity as adjunct faculty member of three institutions; served as advisor for NRC post-doctoral researcher; established US-France Bilateral Agreement in Oceanography element on “Domestication of Molluscan Shellfish.” Research accomplishments: demonstrated trophic transfer of heavy metal pollutants in microalgae-mollusk food chain; established biochemical basis for differences in nutritional value of microalgal strains for bivalve mollusks (especially concerning essential sterols and fatty acids); developed ration and regime feeding tables for nursery culture of bivalve mollusks; elucidated histopathological effects of harmful microalgae upon bivalves; established new flow-cytometric methods for assessing phytoplankton physiology and morphology and function of molluscan hemocytes.

11/79 Laboratory Technician.

Olin Research, New Haven, CT. Four-week temporary position during hiring freeze at Milford Laboratory. Responsible for outfitting media-preparation laboratory. Required purchasing glassware, chemicals, and some large equipment, arranging materials for efficient use in a newly-rebuilt laboratory room, assembling annotated notebook of medium formulations required by microbiologists in a large research program, and training technicians in media-preparation

procedures. Accomplishment: established working laboratory that continued to function over 20 years later.

1/78-9/79 Biological Laboratory Technician (GS-5 -GS-7).

National Marine Fisheries Service, Northeast Fisheries Center, Milford, CT. Responsibilities included completing all aspects of a thesis project on heavy-metal pollutant effects upon cultured microalgae and larval oysters. Responsible for regular, periodic subculture routine for laboratory culture collection of over 100 axenic algal strains, producing algal food cultures using semi-continuous mass culture techniques, and rearing bivalve mollusks from fertilized eggs. Duties included algal culture procedures, determination of bacterial contamination in algal cultures, eliminating contaminants using antibiotics and other techniques, microscopic staining of algal cells, and identification of algal species using light, phase-contrast, and fluorescence microscopy. Accomplishments: completed MS research and became competent research scientist

9/77-9/78 Assistant Instructor.

University of Bridgeport, Bridgeport, CT. Responsible for formulating, preparing, and conducting undergraduate biology laboratory exercises. Also responsible for writing and grading laboratory examinations. Courses assisted in were: Bio 320, Microbiology; Bio 114, Anatomy and Physiology; Bio 110, Human Biology; and Bio 109, Foundations of Life.

1/77-9/77 Laboratory Technician.

Greater Bridgeport Regional Narcotics Laboratory, Bridgeport, CT. Responsible for laboratory determinations of abuse levels of narcotics in blood and urine samples from half-way-house and methadone-maintenance patients. Full qualitative drug screens were done using thin-layer chromatography, and confirmation tests were done spectrophotometrically. Specific duties included preparation of solutions, extraction of samples in organic solvents; spotting, developing, staining, and reading TLC plates; preparation of suspected positive samples for confirmation, and final testing using immunological procedures.

6. AWARDS

NOAA Special Achievement Award, 1981.

Outstanding performance rating: 1982, 1983, 1984, 1985, 1987, 1991, 1992, 1993.

Certificate of Recognition for "... notable performance during extended absence of the Investigation Chief," 1985.

Special Act or Service Award, 1986.

Sustained Superior Performance Awards; 1989, 1990, 1994-2000.

Quality Step Increase, 2002; Performance Award 2003.

1998 NOAA Technology Transfer Award.

1999 NOAA Fisheries Bronze Medal.

2001, Judith Brenman-Hoskins Award.

6. PUBLICATIONS

a. Peer reviewed

Wikfors, G.H. and R. Ukeles. 1982. Growth and adaptation of estuarine

unicellular algae in media with excess copper, cadmium, or zinc, and effects of metal-contaminated algal food on Crassostrea virginica larvae. *Marine Ecology -- Progress Series*, 7: 191-206.

Ukeles, R. and G.H. Wikfors. 1982. Design, construction, and operation of a rearing chamber for spat of Crassostrea virginica. *Journal of Shellfish Research*, 2: 35-39.

Wikfors, G.H., J.W. Twarog, Jr., and R. Ukeles. 1984. Influence of chemical composition of algal food sources on growth of juvenile oysters, Crassostrea virginica. *Biological Bulletin*, 167:251-263

Ukeles, R., G.H. Wikfors, and J.W. Twarog, Jr. 1984. Relative growth rate cycles in Crassostrea virginica Gmelin fed five algal diets. *Journal of Shellfish Research*, 4: 155-159.

Wikfors, G.H. 1986. Altering growth and gross chemical composition of two microalgal molluscan food species by varying nitrate and phosphate. *Aquaculture*, 59: 1-14.

Ukeles, R. and G.H. Wikfors. 1988. Nutritional value of microalgae cultured in the absence of vitamins for growth of juvenile oysters, Crassostrea virginica. *Journal of Shellfish Research*, 7: 381-387.

Gladu, P.K., G.W. Patterson, G.H. Wikfors, D.J. Chitwood, and W.R. Lusby. 1990. The occurrence of brassicasterol and epibrassicasterol in the Chromophycota. *Comparative Biochemistry and Physiology*, 97B: 491-494.

Gladu, P.K., G.W. Patterson, G.H. Wikfors, and W.R. Lusby. 1991. Free and combined sterols of Pavlova gyraus. *Lipids*, 26: 656-659.

Gladu, P.K., G.W. Patterson, G.H. Wikfors, D.J. Chitwood, and W.R. Lusby. 1991. Sterols of some diatoms. *Phytochemistry*, 30: 2301-2303.

Wikfors, G.H., A. Neeman, and P.J. Jackson. 1991. Cadmium-binding polypeptides in microalgal strains with laboratory-induced cadmium tolerance. *Marine Ecology --Progress Series*, 79: 163-170.

Patterson, G.W., P.K. Gladu, G.H. Wikfors, and W.R. Lusby. 1992. Unusual tetraene sterols in some phytoplankton. *Lipids*, 27: 154-156.

Wikfors, G.H. and R.M. Smolowitz. 1993. Detrimental effects of a Prorocentrum isolate upon hard clams and bay scallops in laboratory feeding studies. In: Smayda, T.J. and Y. Shimizu, eds., *Toxic Phytoplankton Blooms in the Sea*. Elsevier, New York, pp. 447-452.

Ukeles, R., G.H. Wikfors, and G.E. Ferris. 1993. Adaptation of the colorless freshwater cryptophyte, Chilomonas paramecium, to seawater in the growth medium. *Journal of Protozoology*, 39: 399-405.

Wikfors, G.H., G.E. Ferris, and B.C. Smith. 1993. The relationship between gross biochemical composition of cultured algal foods and growth of the hard clam, Mercenaria mercenaria. *Aquaculture*, 108: 135-154.

Smith, B.C. and G.H. Wikfors. 1993. Phytoplankton pigments accumulated by the Arctic surfclam, Mactromeris polynyma. *Journal of Shellfish Research*, 11: 479-483.

Tsitsa-Tzardis, E., G.W. Patterson, G.H. Wikfors, P.K. Gladu, and D. Harrison. 1993. Sterols of Chaetoceros and Skeletonema. *Lipids*, 28: 485-487.

Patterson, G.W., E. Tsitsa-Tzardis, G.H. Wikfors, D.J. Chitwood, and D. Harrison. 1993. Sterols of Tetraselmis. *Comparative Biochemistry and Physiology*, 105B: 253-256.

Patterson, G.W., P.K. Gladu, G.H. Wikfors, E.J. Parish, P.D. Livant, and W.R. Lusby. 1993. Identification of two novel dihydroxysterols from Pavlova. *Lipids*, 28: 771-773.

Wikfors, G.H., W.J. Blogoslawski, and R. Goldberg. 1993. Relationships between bacterial abundance and selected hydrographic and seston measures at three Long Island Sound sites, 1987-1988. In: Van Patten, P. (ed). *Long Island Sound Research Conference Proc. Pub. No. CT-SG-93-03*, Connecticut Sea Grant, Groton, CT.

Wikfors, G.H., J.W. Twarog, Jr., G.E. Ferris, B.C. Smith, and R. Ukeles. 1994. Survival and growth of post-set oysters and clams on diets of cadmium-contaminated microalgal cultures. *Marine Environmental Research*, 37:257-281.

Patterson, G.W., E. Tsitsa-Tzardis, G.H. Wikfors, P.K. Gladu, D.J. Chitwood, and D. Harrison. 1994. Sterols and alkenones of Isochrysis. *Phytochemistry*, 35:1233-1236.

Wikfors, G.H. and G.W. Patterson. 1994. Differences in strains of Isochrysis of importance to mariculture. *Aquaculture*, 123:127-135.

Patterson, G.W., E. Tsitsa-Tzardis, G.H. Wikfors, P. Ghosh, and P.K. Gladu. 1994. Sterols of Eustigmatophytes. *Lipids*, 29:661-664.

Wikfors, G.H. and R.M. Smolowitz. 1995. Experimental and histological studies of four life-history stages of the eastern oyster, Crassostrea virginica, exposed to a cultured strain of the dinoflagellate Prorocentrum minimum. *Biological Bulletin of the Woods Hole Oceanographic Institution*, 188:313-328.

Gladu, P.K., G.W. Patterson, G.H. Wikfors, and B. C. Smith. 1995. Sterol, fatty acid, and pigment characteristics of UTEX 2341, a marine eustigmatophyte identified previously as Chlorella minutissima. (Chlorophyceae). *Journal of Phycology*, 31:774-777.

- Wikfors, G. H., G. W. Patterson, P. Ghosh, R. A. Lewin, B. C. Smith, J. H. Alix. 1996. Growth of post-set oysters, *Crassostrea virginica*, on high-lipid strains of algal flagellates *Tetraselmis* spp. (Chlorophyta). *Aquaculture*, 143:411-419.
- Ghosh, P., G. W. Patterson, and G. H. Wikfors. 1997. Use of an improved internal-standard method in the quantitative sterol analyses of phytoplankton and oysters. *Lipids*, 32:(9):1011-1014.
- Ghosh, P., G. W. Patterson, and G. H. Wikfors. 1998. Sterols of some marine *Prymnesiophyceae*. *Journal of Phycology*, 34:511-514.
- Smith, B. C. and G. H. Wikfors. 1998. An automated rearing chamber system for studies of shellfish feeding. *Aquacultural Engineering*, 17:69-77.
- Wikfors, G. H. 2000. Microalgal culture, pp. 520-525. In: Stickney, R. R. (ed.), *Encyclopedia of Aquaculture*. John Wiley & Sons, Inc. (invited).
- Wikfors, G.H. and M. Ohno. 2001. Minireview: Impact of algal research in aquaculture. *Journal of Phycology*, 37:968-974. (invited).
- Capriulo, G.M, Smith, G., Troy, R., Wikfors, G.H., Pellet, J., Yarish, C. 2002. The planktonic food web structure of a temperate zone estuary, and its alteration due to eutrophication. *Hydrobiologia*, 475/476, 263-333.
- Hégaret, H., Wikfors, G.H. & Soudant, P. 2003a. Flow-cytometric analysis of hemocytes from eastern oysters, *Crassostrea virginica*, subjected to a sudden temperature elevation. I. Haemocyte types and morphology. *J. Exper. Mar. Biol. Ecol.* 293, 237-248.
- Hégaret, H., Wikfors, G.H., & Soudant, P. 2003b. Flow-cytometric analysis of hemocytes from eastern oysters, *Crassostrea virginica*, subjected to a sudden temperature elevation. II. Hemocyte functions aggregation, viability, phagocytosis and respiratory burst. *J. Exper. Mar. Biol. Ecol.* 293, 249-265.
- Hégaret, H., Wikfors, G.H., Soudant, P., Delaporte, M., Alix, J.H., Quéré, C., Le Coz, J.R., Paillard, C., Moal, J. & Samain, J.-F. 2004. Immunological competence of eastern oysters, *Crassostrea virginica*, fed different microalgal diets and challenged with a high-temperature stress. *Aquaculture* 234, 541-560.
- Hégaret, H. & Wikfors, G.H. 2005. Time-dependent changes in hemocytes of eastern oysters, *Crassostrea virginica*, and northern bay scallops, *Argopecten irradians irradians*, exposed to a cultured strain of *Prorocentrum minimum*. *Harmful Algae* 4, 187-199.
- Hégaret, H. & Wikfors, G.H. 2005. Effects of natural and field-simulated blooms of the dinoflagellate *Prorocentrum minimum* upon hemocytes of eastern oysters, *Crassostrea*

virginica, from two different populations. *Harmful Algae* 4, 201-209.

Wikfors, G.H. 2005. A review and new analysis of trophic interactions between *Prorocentrum minimum* and clams, scallops, and oysters. *Harmful Algae* 4, 585-592.

Meseck, S.L., Alix, J.H., & Wikfors, G.H. 2005. Photoperiod and light intensity effects on growth and utilization of nutrients by the aquaculture feed microalga, *Tetraselmis chui* (PLY429). *Aquaculture* 246, 393– 404.

Persson, A., Smith, B.C., Wikfors, G.H., & Quilliam, M. 2006. Grazing on toxic *Alexandrium fundyense* resting cysts and vegetative cells by the eastern oyster (*Crassostrea virginica*). *Harmful Algae* 5, 678-684.

Buggé, D.M., Hégaret, H., Wikfors, G.H. & Allam, B. 2007. Oxidative burst in hard clam (*Mercenaria mercenaria*) haemocytes. *Fish & Shellfish Immunology* 23, 188-196.

Hégaret, H., Wikfors, G.H., Soudant, P., Lambert, C., Shumway, S.E., Bérard, J.B., & Lassus, P. 2007. Toxic dinoflagellates (*Alexandrium fundyense* and *A. catenella*) have minimal apparent effects on oyster hemocytes. *Marine Biology* 152, 441–447.

Meseck, S.L., Smith, B.C., Wikfors, G.H., Alix, J.H., & Kapareiko, D. 2007. Nutrient interactions between phytoplankton and bacterioplankton under different carbon dioxide regimes. *Journal of Applied Phycology*, 19: 229-237.

Meseck, S.M., Wikfors, G.H., Alix, J.H., Smith, B.C. & Dixon, M.S. 2007. Impacts of a cyanobacterium contaminating large-scale aquaculture feed cultures of *Tetraselmis chui* upon survival and growth of bay scallops, *Argopecten irradians irradians*. *Journal of Shellfish Research* 26, 1071-1074.

Hégaret, H., da Silva P. M., Wikfors, G.H., Lambert, C., De Bettignies, T., Shumway, S. E. & Soudant, P. 2007. Hemocyte responses of Manila clams, *Ruditapes philippinarum*, with varying parasite, *Perkinsus olseni*, severity to toxic-algal exposures. *Aquatic Toxicology* 84, 469–479.

Hégaret, H., Wikfors, G.H., & Shumway, S. 2007. Diverse feeding responses of five species of bivalve mollusk when exposed to three species of harmful algae. *Journal of Shellfish Research* 26, 549-559.

Da Silva, P. M., Hégaret, H., Lambert, C., Wikfors, G. H., Le Goïc, N., Shumway, S. E., & Soudant, P. (2008). Immunological responses of the Manila clam (*Ruditapes philippinarum*) with varying parasite (*Perkinsus olseni*) burden, during a long-term exposure to the harmful alga, *Karenia selliformis*, and possible interactions. *Toxicon*, 51(4), 563-573.

Galimany, E., Sunila, I., Hégaret, H., Ramón, M., & Wikfors, G. H. (2008). Pathology and

immune response of the blue mussel (*Mytilus edulis* L.) after an exposure to the harmful dinoflagellate *Prorocentrum minimum*. *Harmful Algae*, 7(5), 630-638.

Galimany, E., Sunila, I., Hégaret, H., Ramón, M., & Wikfors, G. H. (2008). Experimental exposure of the blue mussel (*Mytilus edulis*, L.) to the toxic dinoflagellate *Alexandrium fundyense*: Histopathology, immune responses, and recovery. *Harmful Algae*, 7(5), 702-711.

Hégaret, H., Shumway, S. E., Wikfors, G. H., Pate, S., & Burkholder, J. M. (2008). Potential transport of harmful algae via relocation of bivalve molluscs. *Marine Ecology-Progress Series*, 361, 169.

Hégaret, H., Shumway, S.E., & Wikfors, G.H. 2008. *In vitro* interactions between several species of harmful algae and hemocytes of bivalve molluscs. Proceedings of 12th International Conference on Harmful Algae. IOC, UNESCO, Copenhagen, pp 356-359.

Hégaret, H., Shumway, S.E., & Wikfors, G.H. 2008. Harmful algae can be transported via relocation of bivalve shellfish. Proceedings of 12th International Conference on Harmful Algae. IOC, UNESCO, Copenhagen, pp. 253-255

Persson, A., Smith, B. C., Wikfors, G. H., & Alix, J. H. (2008). Dinoflagellate gamete formation and environmental cues: Observations, theory, and synthesis. *Harmful Algae*, 7(6), 798-801.

Persson, A., Smith, B. C., Dixon, M. S., & Wikfors, G. H. (2008). The Eastern mudsnail, *Ilyanassa obsoleta*, actively forages for, consumes, and digests cysts of the dinoflagellate, *Scrippsiella lachrymosa*. *Malacologia*, 50(1), 341-345.

Hégaret, H., Da Silva, P. M., Sunila, I., Shumway, S. E., Dixon, M. S., Alix, J. & Soudant, P. (2009). Perkinsosis in the Manila clam *Ruditapes philippinarum* affects responses to the harmful-alga, *Prorocentrum minimum*. *Journal of Experimental Marine Biology and Ecology*, 371(2), 112-120.

Hégaret, H., Wikfors, G. H., Shumway, S. E., & Rodrick, G. E. (2009). Biotxin contamination and shellfish safety. *Shellfish Safety and Quality*, 43-80.

Li, Y., Veilleux, D. J., & Wikfors, G. H. (2009). Particle removal by Northern bay scallops *Argopecten irradians irradians* in a semi-natural setting: Application of a flow-cytometric technique. *Aquaculture*, 296(3), 237-245.

Meseck, S. L., Alix, J. H., Wikfors, G. H., & Evan Ward, J. (2009). Differences in the soluble, residual phosphate concentrations at which coastal phytoplankton species up-regulate alkaline-phosphatase expression, as measured by flow-cytometric detection of ELF-97® fluorescence. *Estuaries and Coasts*, 32(6), 1195-1204.

Smith, B. C., Persson, A., & Wikfors, G. H. (2009). A particle separator used to concentrate Dinoflagellate cysts from sediment. *Limnol. Oceanogr. Methods*, 7, 521-526.

Wikfors, G. H., & Krome, C. (2009). Ocean acidification and molluscan hemocytes: Basis and rationale for experimental studies. *J Shellfish Res*, 28, 658-659.

Hégaret, H., Smolowitz, R. M., Sunila, I., Shumway, S. E., Alix, J., Dixon, M., & Wikfors, G. H. (2010). Combined effects of a parasite, QPX, and the harmful-alga, *Prorocentrum minimum* on northern quahogs, *Mercenaria mercenaria*. *Marine Environmental Research*, 69(5), 337-344.

Li, Y., Siddiqui, G., & Wikfors, G. H. (2010). Non-lethal determination of sex and reproductive condition of Eastern oysters *Crassostrea virginica* Gmelin using protein profiles of hemolymph by Proteinchip® and SELDI-TOF-MS technology. *Aquaculture*, 309(1), 258-264.

May, S. P., Burkholder, J. M., Shumway, S. E., Hégaret, H., Wikfors, G. H., & Frank, D. (2010). Effects of the toxic dinoflagellate *Alexandrium monilatum* on survival, grazing and behavioral response of three ecologically important bivalve molluscs. *Harmful Algae*, 9(3), 281-293.

Rose, J. M., Tedesco, M. A., Li, Y., O'Brien-Clayton, K., Olsen, C., Lyman, M., & Wikfors, G. H. (2010). Spatial and temporal trends in phytoplankton community composition within a large urban estuary. In *Proceedings from the 2010 AGU Ocean Sciences Meeting*. American Geophysical Union, 2000 Florida Ave., N. W. Washington DC 20009 USA,

Shumway, S. E., Rosa, M., Holohan, B. A., Bullard, S. G., & Wikfors, G. H. 2010. Biofouling Tunicates on Aquaculture Gear as Potential Vectors of Harmful Algal Introductions. ISSHA Proceedings, Crete.

Giner, J. L., & Wikfors, G. H. (2011). "Dinoflagellate Sterols" in marine diatoms. *Phytochemistry*, 72(14), 1896-1901.

Hégaret, H., Da Silva, P. M., Wikfors, G. H., Haberkorn, H., Shumway, S. E., & Soudant, P. (2011). *In vitro* interactions between several species of harmful algae and haemocytes of bivalve molluscs. *Cell Biology and Toxicology*, 27(4), 249-266.

Kapareiko, D., Lim, H. J., Schott, E. J., Hanif, A., & Wikfors, G. H. (2011). Isolation and Evaluation of New Probiotic Bacteria for use in Shellfish Hatcheries: II. Effects of a *Vibrio* sp. Probiotic Candidate Upon Survival of Oyster Larvae (*Crassostrea virginica*) in Pilot-Scale Trials. *Journal of Shellfish Research*, 30(3), 617-625.

Lim, H.J., Kapareiko, D., Schott, E.J., Hanif, A., and Wikfors, G.H.. (2011). Isolation and

Evaluation of New Probiotic Bacteria for use in Shellfish Hatcheries: I. Isolation and Screening for Bioactivity. Journal of Shellfish Research, 30(3):609-615.

Smith, B. C., Persson, A., Selander, E., Wikfors, G. H., & Alix, J. (2011). Toxin profile change in vegetative cells and pellicle cysts of *Alexandrium fundyense* after gut passage in the eastern oyster *Crassostrea virginica*. *Aquatic Biology*, 13(2), 193-201.

Wikfors, G. H. (2011). Trophic interactions between phytoplankton and bivalve aquaculture. *Shellfish Aquaculture and the Environment*, 125-133.

Rose, J. M., Ferreira, J. G., Stephenson, K., Bricker, S. B., Tedesco, M., & Wikfors, G. H. (2012). Comment on Stadmark and Conley (2011) "Mussel farming as a nutrient reduction measure in the Baltic Sea: consideration of nutrient biogeochemical cycles". *Marine Pollution Bulletin*, 64(2), 449.

Croxton, A. N., Wikfors, G. H., & Schulterbrandt-Gragg, R. D. (2012). Immunomodulation in Eastern Oysters, *Crassostrea virginica*, Exposed to a PAH-Contaminated, Microphytobenthic Diatom. *Aquatic Toxicology*, 118–119, 27–36.

Flores, H. S., Wikfors, G. H., & Dam, H. G. (2012). Reactive oxygen species are linked to the toxicity of the dinoflagellate *Alexandrium* spp. to protists. *Aquatic Microbial Ecology*, 66(2), 199.

Fuentes, M. S., & Wikfors, G. H. (2012). Control of Domoic Acid Toxin Expression in *Pseudo-nitzschia multiseries* by Copper and Silica: Relevance to Mussel Aquaculture in New England (USA). *Marine Environmental Research*, 83, 23-28.

Giner, J. L., Wikfors, G. H., & Hassett, R. P. (2012). Metabolic studies of marine sterols by Copepods. *Planta Medica*, 78(11), PC5 (Congress abstract).

Li, Y., Meseck, S. L., Dixon, M. S., Rivara, K., & Wikfors, G. H. (2012). Temporal Variability in Phytoplankton Removal by a Commercial, Suspended Eastern Oyster Nursery and Effects on Local Plankton Dynamics. *Journal of Shellfish Research*, 31(4), 1077-1089.

Li, Y., Sunila, I., & Wikfors, G. H. (2012). Bioactive effects of *Prorocentrum minimum* on juvenile bay scallops (*Argopecten irradians irradians*) are dependent upon algal physiological status. *Botanica Marina*, 55(1), 19-29.

Meseck, S. L., Li, Y., Dixon, M. S., Rivara, K., Wikfors, G. H., & Luther III, G. (2012). Effects of a commercial, suspended eastern oyster nursery upon nutrient and sediment chemistry in a temperate, coastal embayment. **Aquacult Environ Interact Vol. 3: 65–79.**

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content differs between life stages of *Alexandrium fundyense* (Dinophyceae). *Harmful Algae*, *19*, 101–107.

Roberts, S. B., Sunila, I., & Wikfors, G. H. (2012). Immune response and mechanical stress susceptibility in diseased oysters, *Crassostrea virginica*. *Journal of Comparative Physiology B: Biochemical, Systemic, and Environmental Physiology*, *182*(1), 41–48.

Croxton, A., & Wikfors, G. (2013, December). Intracellular pH Recovery Rates of Hemocytes from Estuarine and Open Ocean Bivalve Species Following In vitro Acid Challenge. In *AGU Fall Meeting Abstracts* (Vol. 1, p. 1716).

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8. PRESENTATIONS

- a. Talks presented at professional meetings (**invited indicated**) (~ 20 in 2005-2006 not listed here, but updated under Abstracts above)

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Wikfors, G.H., R. Ukeles, and G.E. Ferris. 1989. Nutrient deficiency and storage products in cultured diatoms: Do centric and pennate diatoms respond alike? Annual Meeting of the Phycological Society of America, 6-10 August, Toronto, Canada.

Wikfors, G.H., P.K. Gladu, G.W. Patterson, G.E. Ferris, and B.C. Smith. 1990. The role of algal sterols in oyster nutrition: Evidence from Milford feeding studies. 10th Annual Shellfish Biology Seminar, 27 February, Milford, CT.

Gladu, P.K., G.W. Patterson, G.H. Wikfors, and W.R. Lusby. 1990. Free and combined sterols in Pavlova gyraus. 81st American oil Chemists' Society Annual Meeting, 22-26 April, Baltimore, MD.

Goldberg, R. and G.H. Wikfors. 1991. Growth of hard clams in Long Island Sound: Sorting out the determining factors. 11th Annual Shellfish Biology Seminar, 25-27 February, Milford, CT.

Wikfors, G.H. 1991. Hard clam nutrition in the lab and in the field: What does one tell

us about the other? 11th Annual Shellfish Biology Seminar, 25-27 February, Milford, CT.

Wikfors, G.H., A. Neeman, and P.J. Jackson. 1991. Cadmium-binding polypeptides in marine microalgal strains subjected to long-term cadmium stress. 30th Northeast Algal Symposium, 27-28 April, Woods Hole, MA.

Wikfors, G.H., P.K. Gladu, and G.W. Patterson. 1991. In search of the ideal algal diet for oysters: Recent progress, with emphasis on sterols. Annual Meeting of the National Shellfisheries Association, 23-27 June, Portland, ME.

Wikfors, G.H. and R.M. Smolowitz. 1991. Detrimental effects of a Prorocentrum isolate upon hard clams and bay scallops in laboratory feeding studies. Fifth International Conference on Toxic Marine Phytoplankton, 28 October -1 November, Newport, RI.

Smith, B.C., G.H. Wikfors, C.S. Kim, and S.T. Mayne. 1992. Phytoplankton pigments accumulated by the Arctic surfclam, Mactromeris polynyma. 12th Annual Shellfish Biology Seminar, 25-26 February, Milford, CT.

Wikfors, G.H. and R.M. Smolowitz. 1992. Are Prorocentrum strains toxic to bivalve mollusks? Evidence from field and laboratory studies. 12th Annual Shellfish Biology Seminar, 25-26 February, Milford, CT.

Smith, B.C., G.H. Wikfors, C.S. Kim, and S.T. Mayne. 1992. Phytoplankton pigments accumulated by Mactromeris polynyma. 31st Northeast Algal Symposium, 25-26 April, Woods Hole, MA.

Wikfors, G.H., W.J. Blogoslawski, and R. Goldberg. 1992. Relationships between bacterial abundance and selected hydrographic and seston measures at three Long Island Sound sites. Long Island Sound Research Conference, 23-24 October, New Haven, CT..

Wikfors, G.H., R.M. Smolowitz, and B.C. Smith. 1993. Effects of a Prorocentrum isolate upon the oyster, Crassostrea virginica: A study of three life-history stages. 13th Milford Aquaculture Seminar, 23-24 February, Milford, CT.

Wikfors, G.H. and G.W. Patterson. 1993. Isochrysis alphabet soup. 32nd Northeast Algal Symposium, 23-24 April, Woods Hole, MA.

Wikfors, G. H. and R. M. Smolowitz. 1994. Dinoflagellate autolysosomes and responses of different bivalves feeding on Prorocentrum....is there a connection? 14th Milford Aquaculture Seminar, 22-24 February, Milford, CT.

Wikfors, G. H. and R. M. Smolowitz. 1994. Why are dinoflagellates toxic to some shellfish and not others? 33rd Northeast Algal Symposium, 22-24 April, Woods Hole, MA.

Wikfors, G. H. 1996. Phytoplankton can develop tolerance to heavy metals, become metal-contaminated, and harm invertebrates that consume them. 20th Annual Meeting of

the New England Association of Environmental Biologists, Falmouth, MA, 6-8 March (invited).

Wikfors, G. H., B. C. Smith, J. H. Alix, and M. S. Dixon. 1996. When is it time to feed the scallops? National Shellfisheries Association Annual Meeting, Baltimore, MD, 14-18 April.

Wikfors, G. H., G. W. Patterson, and R. A. Lewin. 1996. High-lipid Tetraselmis cultures support rapid growth of post-set oysters and scallops. Annual Meeting of the National Shellfisheries Association, Baltimore, MD 14-18 April.

Wikfors, G. H. and L. Wilkinson. 1997. Phytoplankton culture for nursery rearing of post-set bivalves: Scaling exercises or We can't afford to do that! Can we? 17th Milford Aquaculture Seminar, 24-26 February, New Haven, CT.

Smith, B. C. and G. H. Wikfors. 1997. Design and research plan for the Milford Phytoplankton Culture Greenhouse facility. 17th Milford Aquaculture Seminar, 24-26 February, New Haven, CT.

Wikfors, G. H. 1997. Culturing microalgal feeds for molluscan aquaculture: What do we have to know to do it better? 49th Annual Interstate Seafood Seminar and Aquaculture in the Mid-Atlantic Conference, 4-7 November, Ocean City, MD (invited).

Dixon, M. S. and G. H. Wikfors. 1998. Tetraselmis chui, PLY429, grows better in flat tanks than in tubes. 18th Milford Aquaculture Seminar, 23-25 February New Haven, CT.

Wikfors, G. H. and B. C. Smith. 1998. Simple process-control retro-fits for microalgal, mass-culture tanks. World Aquaculture '98, 15-20 February, Las Vegas, NV.

Wikfors, G. H., J. H. Alix, M. S. Dixon, and B. C. Smith. 1998. Feeding ration and regime as factors controlling growth rate and conversion efficiency of bay scallops. 18th Milford Aquaculture Seminar, 23-25 February, New Haven, CT.

Wikfors, G. H., J. C. Widman, S. Stiles, R. A. Robohm, and A. Calabrese. 1998. New England bay scallops as a one-season aquaculture crop. Marine Aquaculture -- Emerging Technologies and Global Opportunities Workshop, 25-27 June, Stamford, CT (invited).

Wikfors, G. H., J. H. Alix, M. S. Dixon, and B. C. Smith. 1999. Feeding rations and regimes for post-set oysters, Crassostrea virginica, fed cultured microalgae in a land-based nursery. 19th Milford Aquaculture Seminar. 27 February - 1 March, New Haven, CT.

Wikfors, G. H., B. C. Smith, and L. Wilkinson. 2000. Design criteria for microalgal feeds production systems, and the GRAMPS experience. National Shellfisheries Association meeting, 19-23 March. Seattle, WA (invited).

Wikfors, G. H. 2000. Aquacultural feeding standards for molluscan shellfish seed: a first cut. National Shellfisheries Association meeting, 19-23 March, Seattle, WA (invited).

Wikfors, G. H., J. H. Alix, S. Barcia, J. Cullum, S. E. Shumway, and R. M. Smolowitz. 2000. Experimental exposures of bay scallops to cultures of suspected harmful microalgae. National Shellfisheries Association meeting, 19-23 March, Seattle, WA (invited).

Wikfors, G. H., J. H. Alix, S. Barcia, and J. Cullum. 2000. Responses of bay scallops at several life-history stages to cultures of potentially-harmful marine microalgae. 20th Milford Aquaculture Seminar, 28 February - 1 March, New Haven, CT.

Wikfors, G.H. and B.C. Smith. 2000. Intensive culture of microalgae as live feed for bivalve mollusks. Acuicultura, II Seminario Internacional, 27-29 September, Lima, Peru (invited).

Wikfors, G.H. and J.C. Widman. 2000. Intensive seed production of pectinid mollusks. Acuicultura, II Seminario Internacional, 27-29 September, Lima, Peru (invited).

Wikfors, G. H., J. H. Alix, M. S Dixon, and B. Smith. 2001. Effect of feeding ration and regime upon growth and food conversion of juvenile quahogs, Mercenaria mercenaria, and comparison with bay scallops and eastern oysters. Milford Aquaculture Seminar, 26-28 February, New Haven, CT.

Wikfors, G. H. 2001. Feeding strategies for the nursery culture of bivalve mollusks. Aquaculture Canada, May 6-10, Halifax, NS (invited).

Wikfors, G.H. 2002. Livestock domestication in the third millennium: All wet? Milford Aquaculture Seminar, 25-27 February, New Haven, CT.

Wikfors, G.H., Alix, J.H., Smolowitz, R.M., Wallace, L. & Hégaret, H. 2002. Detrimental effects of a recent *Prymnesium* isolate from Boothbay Harbor, Maine (USA), upon juvenile bay scallops, *Argopecten irradians*. National Shellfisheries Association Annual Meeting, 14-18 April, Mystic, CT (invited).

Wikfors, G.H. 2002. Algal feeds and marketing of bivalve molluscan shellfish – is it possible to connect these two subjects? Aquaculture Canada, 17-20 September, Charlottetown, PEI, Canada (invited).

Wikfors, G.H., Smith, B.C., Meseck, S.L., Dixon, M.S., and Alix, J.H. 2003. A decision tree for designing a process to produce microalgal feeds for aquacultured animals. Milford Aquaculture Seminar, 23-25 February, New Haven, CT

Wikfors, G.H., Smolowitz, R.M., Hégaret, H. & Alix, J.H. 2004. The estuarine dinoflagellate, *Prorocentrum minimum* – “HAB” or “HAB-not?” Milford Aquaculture Seminar, 24-26 February, New Haven, CT

Wikfors, G.H., Widman, J.C., Smith, B.C., Veilleux, D., Choromanski, J., Meseck, S.L., Goldberg, R. & Stiles, S. 2004. Development of secure rearing systems for domesticated bivalve broodstock. Aquaculture 2004, 1-5 March, Honolulu, HI (**invited**).

Wikfors, G.H., Alix, J.H., Dixon, M.S., & Smith, B.C.. 2004. The northern quahog *Mercenaria mercenaria* has slower growth and poorer conversion efficiency than oysters or scallops fed identical dietary rations and regimes. Aquaculture 2004, 1-5 March, Honolulu, HI (**invited**).

Wikfors, G.H., 2004. US-France Bilateral Program on Ocean Science, Domestication of Bivalve Molluscan Shellfish. Update for 2004 WCC-99 Broodstock Management, Genetics and Breeding Programs for Molluscan Shellfish, 29 February, Honolulu, HI (**invited**).

Smith, B.C. & Wikfors, G.H. 2004. Large-volume, microalgal culture in a greenhouse environment. Northeast Algal Symposium, 23-25 April, Groton, CT.

Wikfors, G.H. 2004. Microalgal Culture Tech Transfer Session. Northeast Aquaculture Conference and Exposition, 3-4 December, Manchester, NH (**invited**).

Several hundred since 2004.

b. Posters presented at professional meetings (~ 5 in 2005-2006 not listed here, but updated under Abstracts above)

Wikfors, G.H. 1982. Persistence of metal tolerance in two microalgal species (poster). 21st Northeast Algal Symposium, 1-2 May, Woods Hole, MA.

Smith, B.C. and G.H. Wikfors. 1988. The semicontinuous microalgal mass culture system at the Milford Laboratory (poster) .Symposium –Economically Important Marine Plants of the Atlantic: Their Biology and Cultivation, 3-4 October, University of Connecticut, Avery Point, Groton, CT.

Wikfors, G.H., G.E. Ferris, and R. Ukeles. 1992. Factors limiting the salinity tolerance of the freshwater cryptophyte, Chilomonas paramecium: Turning back the tide of evolution. 31st Northeast Algal Symposium, 25-26 April, Woods Hole, MA.

Alix, J. H., M. S. Dixon, B. C. Smith, and G. H. Wikfors. 1997. An experimental feeding regime for larval bay scallops that induces metamorphosis on a controlled schedule. Poster presented at the 17th Milford Aquaculture Seminar, New Haven, CT, 24-26 February.

Dixon, M. A. and G. H. Wikfors. 1997. 3H, pH, and auxospores B Can we make this bug a reliable aquaculture feed? Poster presented at the 17th Milford Aquaculture Seminar, New Haven, 24-26 February.

Dixon, M. S., B. C. Smith, and G. H. Wikfors. 1999. The inverted propeller beanie...A new way to mix large microalgal tanks. 19th Milford Aquaculture Seminar.

Wikfors, G.H., Dam, H.G., McManus, G.B., Shumway, S.E. & Smolowitz, R.M. 2000. Trophic effects of estuarine bloom species upon benthic and planktonic grazers. Symposium on Harmful Marine Algae in the U.S., 4-9 December, Woods Hole, MA (invited).

Wikfors, G.H. & Dam, H.G. 2000. The role of phytoplankton-copepod trophic interactions in hypoxia; underestimated? The Fifth Biennial Long Island Sound Research Conference, 17-18 November, Stamford, CT.

Wikfors, G.H. & Dixon, M.S. 2001. A clear case of overfishing in Room 25. Northeast Fisheries Science Center's Seventh Science Symposium, Westbrook, CT December 11-13.

Hégaret, H. & Wikfors, G.H. 2003. Study of the immune responses of the bivalves *Crassostrea virginica* and *Argopecten irradians irradians* exposed to natural and artificial blooms of the dinoflagellate, *Prorocentrum minimum*. Second Symposium on Harmful Marine Algae in the US, Woods Hole, MA, 8-13 December.

Alix J.H., & Wikfors, G.H. 2004. A flow-cytometric method for counting microalgal and bacterial cells in the same sample. Northeast Algal Symposium, 23-25 April, Groton, CT.

Croxton, A., Wikfors, G.H., & Gragg, R.D., III. 2004. Immune responses in the eastern oyster, *Crassostrea virginica*, exposed to benthic diatoms contaminated with polyaromatic hydrocarbons. Northeast Algal Symposium, 23-25 April, Groton, CT.

Meseck, S.L., Alix, J.H., Wikfors, G.H., & Dixon, M.S. 2004. How different light regimes and intensities affect growth rates and nutrient uptake in the algal strain, *Tetraselmis chui* (PLY429). Northeast Algal Symposium, 23-25 April, Groton, CT.

Hégaret, H., Wikfors, G.H., & Shumway, S.E. 2004. Study of the Immune responses of oysters, *Crassostrea virginica*, and scallops, *Argopecten irradians*, exposed to natural and artificial blooms of *Prorocentrum minimum*. XI International Conference on Harmful Algal Blooms, 14-19 November, Cape Town, South Africa.

Dozens since 2004.

c. Other seminars/presentations

Wikfors, G.H. 1988. Fine fodder for filter-feeders: Algal culture and molluscan nutrition at Milford. Bigelow Laboratory for Ocean Sciences Guest Lecture Series, 20 May, West Boothbay Harbor, ME (**invited**).

Wikfors, G.H. 2000. Succeeding with microalgal feed cultures. Maine State Aquaculture Assoc. monthly meeting, Damariscotta, ME, 5 April (**invited**).

UConn Marine Sciences Department Seminar Series, Groton, CT, 2 : 1992 & 2001.

Horn Point Environmental Laboratory Seminar Series, 9 June 2005.

Yale School of Forestry and Environmental Science, 2006 Seminar on LI Sound Nutrients, 21 March 2006.

Many more since.

9. PROFESSIONAL AFFILIATIONS/ACTIVITIES/SERVICE

a. Professional societies/organizations (offices held)

Northeast Algal Society (elected co-convenor of 1995 Northeast Algal Symposium).

National Shellfisheries Association (elected Member at Large, 2002; Vice President 2004).

Canadian Aquaculture Association

ASLO

b. Editorial positions

Aquaculture (Review Board Member, 2001-2005)

Bulletin of Environmental Contamination and Toxicology (Review Board Member)

Journal of Shellfish Research (Review Board Member)

Harmful Algae (Review Board Member 2003-2013)

Review submissions to: Journal of Aquaculture Engineering, Journal of Experimental Marine Biology and Ecology, Journal of Phycology, also many others sporadically.

Review books for Harmful Algae, Journal of Shellfish Research, and Journal of Phycology.

Also provided critiques of book manuscripts for commercial publishing company (AVI, Westport, CT)

Review NOAA Sea Grant, NIST, OAR, USDA, NSF, and other Proposals.

c. Membership on panels

ICES Working Group on Harmful Algae Bloom Dynamics, 1995-2001. ICES Working Group on Aquaculture (2015-present).

Technical and Industry Advisory Committee, Northeast Regional Aquaculture Center, USDA, 1992-98.

NMFS representative on EPA Long Island Sound Management Committee, 2001-

Present; also member of Science and Technical Advisory Committee 2001-2012.

New York Sea Grant Hard Clam Research Initiative Steering Committee, 2000-present.

Invited participant in Atlantic Northeast Coastal Monitoring Summit, December 10-12,

2002, Durham, NH.
USDA Aquaculture Grant Evaluation Panel member, 2009; Panel Chair 2010.
Oregon Sea Grant Review Panel, 2013.

d. Advisory Services

Chair of Harmful Algae section of NCRI-sponsored National Shellfish Research Plan Workshop, Charleston, SC, 2000.
Co-convenor of “Workshop on Domestication of Bivalve Mollusks,” in La Tremblade, France, May 2002, to develop implementation plan for US-France bilateral Agreement in Oceanography project.
Invited participant in Workshop – United States National Plan for Algal Toxins and Harmful Algal Blooms, Charleston, SC, 21-25 March, 2004.
Science Committee member, 8th International Conference on Shellfish Restoration, 2-5 October 2005, Brest, France.

Consulting During course of work, continually called upon to provide advice and troubleshooting on molluscan feeding and algal culture problems and phytoplankton species identifications, for commercial, academic, and government organizations.

e. Workshops organized, chaired; sessions organized, chaired at professional meetings
Organized special session on Microalgal Feeds at Aquaculture ‘98 (World Aquaculture Triennial Meeting), in Las Vegas, NV.

Organizing Committee for CT Sea Grant-sponsored meeting, Marine Aquaculture: Emerging Technologies and Global Opportunities, @ in Stamford, CT, 1998.

Local Organizing Committee, Third International Conference on Molluscan Shellfish Safety, Southampton, NY, 2000;

Local Organizing Committee, National Shellfisheries Association annual meeting, April 2002 in Mystic, CT.

Science Advisory Committee, International Conference on Shellfish Restoration, October 2005 in Brest, France.

Organizer of International Workshop on Nutrient Bioextraction, December 2009, in Stamford, CT

Organizing Committee, International Oyster Symposium, October 2015, in Falmouth, MA

f. Teaching and mentoring

Guest lecturer in Principles of Nutrition and Feed class at University of Connecticut since 1996

Faculty lecturer on microalgae at Aquavet Course, UPENN and MBL, 2002-2012

Assistant Professor in Residence, Marine Sciences Department, University of Connecticut, Carol Rosetta, MS committee

Kevin Strychar, post-doc (with Prof. Evan Ward)

Hélène Hégaret, Ph.D., Major Research Advisor

Christina Haska, MS committee

Christina Senft, Ph.D. committee

John Doyle, Ph.D. committee

Maria Rosa, MS and Ph.D. committees
 Adjunct Assistant Professor, Florida A&M University
 April Croxton, Ph.D., Major Research Advisor
 Adjunct Faculty status at University of Brest, Plouzané, France
 Hansy Haberkorn Ph.D. committee
 Aurelie Lelong, Ph.D. committee
 Malwenn Lassudrie, Ph.D. committee
 Myrina Boulais, Ph.D. Committee
 Adjunct Faculty Appointment at Center for Biological Research, La Paz, Baja California Sur, Mexico,
 Ricardo Palomares, Ph.D. committee
 Adjunct Assistant Professor, University of Rhode Island
 Wa Iba Surir, Ph.D. committee
 Adjunct Assistant Professor, University of Maryland
 Xavier Alvarez, Ph.D. committee
 Co-advisor for MS-equivalent research program for H       H       at ENSAR, Rennes, France
 External Examiner, Ph.D. Dissertation , University of Tasmania; R.M.P. Knuckey, 1998, Isolation of Australian microalgae and preparation of microalgal concentrates for use as aquaculture feeds.
 Thesis Reader for Jennifer Maister, The Marine Science Institute, University of the Phillipines, 2014-present.
 Mentor for six LIU Southampton “CMER” interns over several years.
 Mentor for over 12 high-school science fair projects over several years.
 Developed and taught the Milford Microalgal Culture Workshop, a 3-day lecture and lab course for hatchery operators and extension personnel held annually at the Milford Laboratory; 2000-2014.
 Judge in the Connecticut State Science Fair nearly every year since 1986
 Post-doc advisor for Agneta Persson (NRC Program), 2002-2003
 Post-doc advisor for Hyun Jeong Lim (KOSEF Fellowship, South Korea), 2005-2006
 Post-doc advisor for Ghazala Siddiqui (HEC and Fulbright Fellowships, Pakistan), 2005-2007.
 Post-doc co-advisor (with J. Evan Ward, UCONN) for Kevin Strychar, 2004-2005.
 Post-doc advisor for M. Soledad Fuentes, 2009-2010
 MS research advisor for Carsten Krome, University of Kiel, Germany, 2010
 Post-doc advisor for Eve Galimany, 2010-2012
 Post-doc advisor for Franck Brulle, 2010
 Post-doc advisor for Sophie DeDecker, 2011
 Post-doc advisor for Yuan Liu, 2013-2014

10. AGENCY SERVICE

a. Committees
 NEFSC Research Council, 1988-1990; and 1998-2000.
 NEFSC Committee on Scientific Standing and Promotion, 1996-98.
 NEFSC Human Resources Council, 1999-2001.

Served on following Milford Laboratory committees: Ad Hoc Open House committees, Library Committee, Computer Committee, Safety Committee.

b. Other

Technical Monitor of three NOAA Fisheries S-K Grants.

With Renee Mercaldo-Allen, organized Milford Research Conversations seminar series
Appointed NMFS Representative to the “Ariakensis Team” to advise ASMFC on possible introductions of non-native oysters into eastern US coastal waters, 2004.

Biological Review Committee member for petition to list the eastern oyster, *Crassostrea virginica*, as threatened or endangered under the Endangered Species Act, 2005

11. OTHER RELEVANT INFORMATION

a. Outside Collaborations

G.W. Patterson, Department of Botany, University of Maryland, College Park, MD. Studies of algal sterols and fatty acids as related to nutrition of oysters, algal taxonomy, and algal metabolic processes.

P.J. Jackson, Los Alamos National Laboratory, Los Alamos, NM. Studies of heavy-metal binding polypeptides in phytoplankton.

R.M. Smolowitz, Laboratory for Marine Animal Health, School of Veterinary Medicine, University of Pennsylvania, Marine Biological Laboratory, Woods Hole, MA. Studies of dinoflagellate effects upon bivalve mollusks.

D.W. Meritt, K.T. Paynter, R.M. Smolowitz, D.T. Walsh, S.M. Gallager, V.M. Bricelj, D.W. Webster, R.I.E. Newell, H.K. Rask, and G.J. Baptist, various affiliations, working group assembled by Northeast Regional Aquaculture Center (NRAC) of USDA. Studies of oyster larval development and growth, reimbursable support from NRAC as, AA Comprehensive Investigation of Larval Development and Mortality in the Eastern Oyster, *Crassostrea virginica*.@

R.A. Lewin, Scripps. Collaborator on identification of high-lipid *Tetraselmis* strains for use a aquaculture feeds.

G. Capriulo, C. Yarish, B. Welsh (University of Connecticut) , and R. Troy (Central Connecticut state University. Co-PI's on Connecticut DEP Long Island Sound Research Fund Project, AAlteration of the planktonic food- web structure of Long Island Sound: Possible enhancement of the microbial loop due to eutrophication.@

G. McManus, H. Dam (University of Connecticut), S. Shumway (LIU Southampton), and R.M. Smolowitz (MBL, Woods Hole). Co-PI=s on projects funded by ECOHAB and UCONN Sea Grant on HAB-grazer interactions.

J.-F. Samain, IFREMER, Brest, France. Partner in development of US-France Bilateral Agreement on Oceanography Project, Domestication of Molluscan Shellfish. @ This Project coordinated activities of about two-dozen PIs at various institutions in the US and France.

H. Dam and P. Visscher, University of Connecticut. Studies of the role of phytoplankton/copepod trophic interactions in eutrophication in Long Island Sound.

J.E. Ward and K. Strychar, University of Connecticut. US EPA-funded studies of phytoplankton dynamics in Long Island Sound using flow cytometry.

S. Lin (University of Connecticut) and P. Glibert (University of Maryland). Studies of genetic relationships between recurrent, annual HAB populations.

P. Soudant and H. Hégaret (IUEM, Brest, France). Methods development and application of flow-cytometric analysis to the innate immune system in molluscan shellfish and HAB-shellfish interactions..

A.R. Place (Center of Marine Biotechnology, Baltimore, MD). Determination of physiological response of bivalve shellfish to harmful microalgal blooms.

G. Ozbay (Delaware State University). Flow-cytometric applications in phytoplankton analysis.

J.-L. Giner (State University of New York at Syracuse). Experimental investigation of sterol metabolism in microcrustaceans and bivalve mollusks and its possible disruption by unusual sterols in harmful microalgae (ECOHAB funding).

S. Roberts (Marine Biological Laboratory, Woods Hole, MA; University of Washington). Studies of the genetic basis for disease- and stress-resistance in bivalve molluscan shellfish.

I. Sunila (State of Connecticut Department of Agriculture, Aquaculture Division). Relationship between immune status and disease progression in oysters.

B. Allam (State University of New York in Stony Brook). Immune status and QPX disease in quahog clams, and particle selection in bivalve mollusks

D. Breitburg (Smithsonian Environmental Research Center). Hypoxia effects upon oysters.

b. GRANTS (details not complete)

1987-1988. Calabrese et al. (NOAA Fisheries, NEFSC, AED). NOAA National Undersea Research Program. Growth of hard Clams in Long Island Sound.

1992, \$23,500. Wikfors, G.H. & Smolowitz, R.M. (MBL, Woods Hole). NOAA Oyster Disease Initiative. Effects of the dinoflagellate *Prorocentrum* upon development of larval and post-set oysters.

1992-1994, \$199,000. Meritt, D.W., Paynter, K.T. (University of Maryland), Smolowitz, R.M. (Marine Biological Laboratory, Woods Hole), Walsh, D.T. (Aquacultural Research Corp., Dennis, MA), Gallager, S.M. (WHOI, Woods Hole, MA), & Wikfors, G.H. Northeastern Regional Aquaculture Center, USDA. A comprehensive investigation of larval development and mortality in the eastern oyster, *Crassostrea virginica*.

1994-1997, Calabrese et al. (NOAA Fisheries, NEFSC, AED). UCONN Marine Science and Technology Center, Bay scallop aquaculture and development in Connecticut: Technology development and demonstration.

1994-1995, \$230,000. Capriulo et al.. Connecticut DEP Long Island Sound Research Fund, Alteration of the planktonic food- web structure of Long Island Sound: Possible enhancement of the microbial loop due to eutrophication.

1996, \$10,000. Wikfors, G.H. & Robohm, R.A. NOAA COP Brown Tide Research Initiative. Isolation and propagation of the brown tide alga, *Aureococcus anophagefferens*, using dialysis culture techniques.

1997, \$230K. S-K Program, Calabrese et al. (NOAA Fisheries, NEFSC, AED). Shellfish and finfish aquaculture enhancement: Technology development and demonstration.

1997-1998, \$135,729. Wikfors, G.H., Shumway, S.E., Dam, H.G., Smolowitz, R.M., McManus, G.B., & Martin, C. ECOHAB: Trophic effects of two dinoflagellates.

1998-2000, \$136,050. McManus, G.B., Wikfors, G.H., Shumway, S.E., Dam, H.G., Smolowitz, R.M., and Martin, C. Connecticut Sea Grant. Trophic effects of two dinoflagellates upon representative pelagic and benthic consumers..

2001-2002, \$200,000. Widman, J.C., Wikfors, G.H., Smith, B., Stiles, S., Goldberg, R. & Choromanski, J. (NOAA Fisheries, NEFSC, AED). NOAA OAR National Marine Aquaculture Initiative, Development and testing of a recirculating seawater nursery system for the culture of bay scallops for on-growing and stock enhancement/restoration.

2002-2004, \$89,912. Ward, J.E. Strychar, K. (UCONN) & Wikfors, G.H. EPA Long Island Sound Program Research Grant, Phytoplankton Dynamics in Long Island Sound: Influence of Environmental Factors on Naturally Occurring Assemblages.

2002-2005, \$431,537. Giner, J.-L. (SUNY Syracuse) & Wikfors, G.H. ECOHAB: HAB sterols and their effects on shellfish and crustaceans.

2005-2007, \$475,016, Shumway, S.E. (UCONN), Burkholder, J.A.M. (NC State), & Wikfors, G.H. ECOHAB: Assessment for the potential of introduction of harmful algal bloom (HAB) species via shellfish transport.

2005-2007, \$154,805, Smolowitz, R.M. (MBL, Woods Hole), Leavitt, D.M.(Roger Williams U., Bristol, RI), Shumway, S.E.(UConn), Walton, W.(Cape Cod Coop. Ext.), & Wikfors, G.H. Effect of temperature on the infection of hard clams (*Mercenaria mercenaria*) by the protistan organism, Quahog Parasite Unknown.

2009-2013, \$450,000 per year, NOAA Aquaculture Program funding provided through annual, internal proposal process. Main projects: Microalgal Culture Technology and Support to the Aquaculture Industry, Probiotic Bacteria for Molluscan Shellfish Hatcheries, *Pseudo-nitzschia* Toxigenesis Environmental Drivers, Shellfish Aquaculture Environmental Interactions, Nutrient Bioextraction Using Shellfish Aquaculture, Environmental Controls of Bivalve Immune Function.

c. RESEARCH INTERESTS

Microalgal culture, including engineering of aquaculture-feed production systems. Phytoplankton physiological ecology. Nutritional requirements of commercially-important bivalve mollusks as related to microalgal morphological and biochemical characteristics. Effects of harmful algae upon invertebrates. Immune responses of bivalve mollusks to environmental and microbiological challenges.

12. REFERENCES

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Mook SeaFarm
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